

# Notice of Allowability

Application No.

10/518,444

Examiner

Sam Rizk

Applicant(s)

MATSUMOTO, WATARU

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/6/2007.
2. ☒ The allowed claim(s) is/are 1-12.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
GUY LAMARRE  
PRIMARY EXAMINER

### **DETAILED ACTION**

- Response to the applicant's amendment dated 4/6/2007
- Claims 1-12 have been submitted for examination
- Claims 1-12 have been allowed

### ***Double Patenting***

1. In view of the applicant's terminal disclaimer filed on 5/29/2007, all objections to the double patenting over US patent no. 7,089,479 are withdrawn.
2. In view of the applicant's terminal disclaimer filed on 6/5/2007, all objections to the double patenting over copending application no. 10/520,061 are withdrawn.

### ***Response to Arguments***

3. Applicant's arguments, see pages 3-4, filed on 4/6 2006 and the telephonic conference interview on 2/20/2007, with respect to claims 1,2,7,11 and 12 have been fully considered and are persuasive. The rejections of claims 1,2,7,11 and 12 under section 35 USC § 102 have been withdrawn.

### **REASONS FOR ALLOWANCE**

The following is an examiner's statement of reasons for allowance:

4. The prior Art of record and Bond paper titled " Low density parity check codes based on sparse matrices with no small cycles"

However, the prior art do not teach, suggest, or otherwise render obvious the claimed limitations cited in claim 1(emphasis added):

A method of generating a check matrix for a low-density parity-check code in which at least one of weights of a column and a row are not uniform, the method comprising:

determining a code length and a coding rate;

determining the weights of the row and the column to determine a basic matrix that satisfies conditions that "the weights of the row and the column are constant" and "number of cycles is equal to or more than six";

selecting a maximum value of the weight of the column that satisfies a condition of "2

searching provisionally an ensemble of the weights of the row and the column weights of the low-density parity-check code via optimization based on Gaussian approximation in a state that number of the weights of the row are limited to continuous two kinds to determine an optimum set of the weights of the row;

deleting the rows sequentially from a bottom of the basic matrix

considering number of rows after a division;

searching provisionally an ensemble of the weights of the row and the column of the low-density parity-check code via optimization based on Gaussian approximation, using the set of the weights of the row as a fixed parameter, to determine an optimum set of the weights of the column;

searching an optimal ensemble of the weights of the row and the column of the low-density parity-check code via optimization based on Gaussian

approximation, using the set of the weights of the row and the column as a fixed parameter; and  
dividing at random the weights of the row and the column of the basic matrix after deleting the rows in a predetermined procedure based on a final ensemble.

5. Claim 2 has similar language as in claim 1 as applied to a Euclidean geometry code.
6. Claims 3-6 depend from claim 2.
7. Claim 7 has similar language as in claim 1 as applied to a Cayley code.
8. Claims 8-10 depend from claim 2.
9. Claim 11 has similar language as in claim 2.
10. Claim 12 has similar language as in claim 7.

### ***Conclusion***

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques Louis-Jacques can be reached on (571) 272-6962. The fax

Art Unit: 2112

phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

Sam Rizk,

Examiner

ART UNIT 2112



12/27/07



GUY LAMARRE  
PRIMARY EXAMINER